

REMARKS

Reconsideration and allowance of this application, as amended, are respectfully requested. The written description and claims 2-7, 13-18, 24, and 31 have been editorially amended, and new claims 41-63 have been added. Claims 1-63 are now pending in the application. The rejections are respectfully submitted to be obviated in view of the amendments and remarks presented herein.

Applicant acknowledges with gratitude the indication that claims 23-29 are allowed, and that dependent claims 6, 7, 17, 18, 37, and 38 contain allowable subject matter. New claims 41-63 have been added. Independent claim 41 corresponds to claims 1 and 6; independent claim 51 corresponds to claims 12 and 17; and independent claim 61 corresponds to claims 36 and 37. Entry of each of the amendments is respectfully requested.

35 U.S.C. § 102(b) - Kinsman

Claims 1-5, 8-10, 30-33, 36, 39, and 40 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,789,803 to Kinsman (hereinafter “Kinsman”). The Office Action asserts in pertinent part that “Kinsman discloses, referring to figures 3A-3FF, a structure for use in a semiconductor package, said structure comprising: . . . a third material (*not shown*) provided on said circuit board and extending between said first and second materials to form a diversion dam for an encapsulation material (see col. 5, lines 40-45) [claim 1], . . . wherein said third material is a thin layer of material applied to one or

both of said die and said circuit board, at a location adapted to face an inlet for an encapsulation compound (see col. 5, lines 40-45) [claim 8], wherein said third material resides on said die [claim 9], wherein said third material resides on said circuit board [claim 10]” (emphasis added). In response to Applicant’s response filed June 28, 2002, the Office Action asserts that “the features upon which Applicant relies (i.e., that the claimed third material is located between the die and the circuit board) are not recited in the rejected claims,” and that “[t]he term ‘between’ does not limit the third material to simply the plane the first and second material lie in.”

For all of the reasons articulated in Applicant’s response filed June 28, 2002, the rejection of claims 1-5, 8-10, 30-33, 36, 39, and 40 under § 102(b) as being anticipated by Kinsman is respectfully traversed. For at least the following reasons, the disclosure of Kinsman does not anticipate Applicant’s claimed invention.

Applicant’s claim 1 defines a structure comprising, *inter alia*, “a third material provided on said circuit board and extending between said first and second materials to form a diversion dam for an encapsulation material.” The structure that results from Kinsman’s method of assembly is different from Applicant’s claimed structure. Kinsman’s continuous bead of one material is applied only after the die and leadframe have already been attached to one another, i.e., “each die 10 is laminated to the leadframe 12 by pressing the die 10 against the leadframe 12 with the adhesive 36 sandwiched therebetween.” Therefore, the only

constituent between Kinsman's die and leadframe is adhesive 36 (see Kinsman Figs. 3A and 3B).

In Applicant's claimed structure, however, not only are the first and second adhesive materials "provided between a die and a circuit board," but a third material is provided "*on said circuit board and extending between said first and second materials* to form a diversion dam for an encapsulation material." (See Applicant's Fig. 2.) Thus, by definition, Applicant's claimed third material is located between the die and the circuit board; Kinsman's bead of material is not.

The Office Action asserts that "the features upon which Applicant relies (i.e., that the claimed third material is located between the die and the circuit board) are not recited in the rejected claims." Applicant respectfully disagrees. The claimed first adhesive material is provided between the die and the circuit board. The claimed second adhesive material is also provided between the die and the circuit board. And, Applicant's claimed third material is provided "*on said circuit board and extending between said first and second materials* to form a diversion dam for an encapsulation material." (See Applicant's Fig. 2.)

The Office Action acknowledges that "the claims are interpreted in light of the specification," but nonetheless asserts that "[t]he term 'between' does not limit the third material to simply the plane the first and second material lie in." Applicant respectfully

disagrees. Specification page 4, line 16, through page 5, line 10, discloses the following with respect to the third material:

To aid in encapsulation, the improved BOC package adds a smaller third piece of material, for example, *adhesive tape 202 perpendicular to the two pieces of double sided adhesive 106, 108 to block the wirebond slot 112* on the side of the wirebond slot 112 closest to the gate 120. *The material 202 thereby forms a diversion dam to divert the compound from filling the wirebond slot 112 before encapsulating the die 104 during encapsulation.* The material 202 if formed as a third piece of tape need only have adhesive on one side because the material 202 is not needed to aid in attaching the pre-encapsulated die 104 to the board 102 since the two piece double sided adhesive 106, 108 are adequate for attachment.

During encapsulation, *the material 202 diverts the infused compound from the wirebond slot 112* such that the compound first fills the area surrounding the bottom of the die 104 (opposite the side of gate 120), then fills the area surrounding the perimeter of the die 104 and thereafter the wirebond slot 112 is filled with the compound as illustrated by directional arrows 204-216.

Contrary to the assertion in the Office Action, the claimed third material is located between the die and the circuit board, because the claims are interpreted in light of the specification, and the specification teaches that “[t]he material 202 thereby forms a diversion dam to divert the compound from filling the wirebond slot 112 before encapsulating the die 104 during encapsulation.” See also the disclosure at specification page 3, lines 11-16:

The present invention adds a small piece of material, for example, adhesive tape, oriented perpendicular to the conventional two-piece tape system used to attached a die to a circuit board. The material is located *in front of the gate of the BOC package during*

encapsulation to form a diversion dam thereby causing a compound during encapsulation to fill the wirebond slot last.

And, see the disclosure at specification page 6, lines 8-10: “Further, instead of using adhesive tape for the diversion dam a thin layer of other material can be deposited *between the die and circuit board* . . .” The claimed third material, therefore, forms a diversion dam by virtue of its location between the die and the circuit board. Claim 1, therefore, distinguishes over Kinsman.

Claim 30, which defines a structure having first and second pieces of “double side adhesive tape secured between said die and said circuit board” and “a thin layer of material provided between said first and second pieces of doubled sided adhesive tape to form an encapsulation diversion dam” is similarly allowable. The dependent claims are allowable along with independent claims 1, 30, and 36, and on their own merits.

For at least the above reasons, reconsideration and withdrawal of the rejection of claims 1-5, 8-10, 30-33, 36, 39, and 40 under § 102(b) are respectfully requested.

35 U.S.C. § 103(a) - Kinsman in view of Murakami; Kinsman in view of Murakami and Frantz; Kinsman '764

Claims 11 and 34 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kinsman in view of U.S. Patent No. 6,124,629 to Murakami et al. (“Murakami”); claims 12-16 and 19-22 stand rejected under § 103(a) as allegedly being

unpatentable over Kinsman in view of Murakami and U.S. Patent No. 6,285,558 to Frantz et al. ("Frantz"); and claim 35 stands rejected under § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,159,764 to Kinsman ("Kinsman '764").

For all of the reasons identified above with respect to the rejection under § 102(b), each of the rejections under § 103(a) is similarly respectfully traversed. The Office Action relies upon the secondary references and Kinsman '764 for their purported teachings related to limitations such as Applicant's claimed memory die (claim 11) and processor (claim 12). Regardless of any such teachings, none of the secondary references or Kinsman '764 rectifies the deficiency associated with Kinsman, i.e., the failure to anticipate Applicant's claimed structure with the third material located between the die and the circuit board. Thus, the combined disclosures would not have rendered obvious the embodiments of the invention defined by any of the rejected claims.

For at least the above reasons, reconsideration and withdrawal of each of the rejections under § 103(a) are respectfully requested.

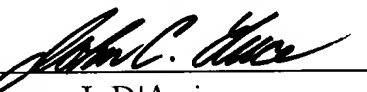
Application No.: 09/808,156

Docket No.: M4065.0372/P372

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Dated: February 5, 2003

Respectfully submitted,

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